# PIONEER
# Photo Tachometers

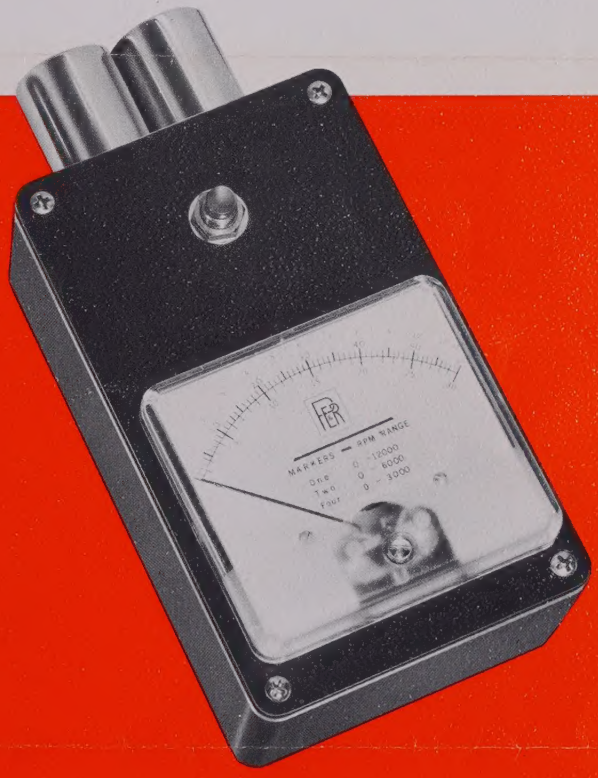
Pioneer Photo Tachometers operate on an entirely new principle tested and proved to be extremely useful and practical in RPM measurement. They have no electrical or mechanical contact with the device being measured, and the results are shown instantly and continuously through any variation within their range.

Pioneer Tachometers use a Cadmium Sulphide photocell as their "eye", which counts pulses as the object rotates. Pulses are converted by a transistorized computer circuit to a direct RPM reading on the dial. Incorporating its own light source, the Pioneer Tachometer operates similar to a flashlight. Easy to use, the unit is pointed at the rotating device to be measured, the activation button pressed and the RPM measurement is read on the dial. To read RPM's accurately, a contrasting mark must appear or be placed on the edge or face of the rotating device. This mark actuates the photocell each time it passes through the beam of light and creates the pulse which is counted.

## PIONEER TACHOMETER
## Model 12 0 TO 12,000 RPM

☐ FOR FAST ACCURATE SPEED MEASUREMENTS OF MOVING MACHINERY ☐ SELF CONTAINED COMPLETELY PORTABLE

- **Versatile . . . Measures RPM Electronically**
- **Reads Speed Instantly, Constant or Changing**
- **No Torque Loss**
- **Use on Any Type Moving Machinery**
- **Light Weight . . . Easy to Use**




Now you can check the operating speed of a grinding wheel or any other moving part immediately.

## NO WIRES OR MECHANICAL CONNECTIONS

The Pioneer Electronic Tachometer is a completely portable photoelectric instrument that can be used anywhere. You just press the button, aim the beam, then read the speed. Calibration is immediate and exact.

THE PIONEER ELECTRIC & RESEARCH CORPORATION
A SUBSIDIARY OF JOHNSON SERVICE COMPANY
743 CIRCLE AVENUE • FOREST PARK, ILLINOIS 60130 • TELEPHONE 312/771-8242

PIONEER

# Photo Tachometers

## LOW COST - HIGH ACCURACY

## Model 24

### O TO 2400 RPM

For low speed RPM measurement, Pioneer's Model 24 Tachometer is an economical instrument with remarkable accuracy. Unit is completely portable, self-contained, with a transistorized circuit. For measuring 0 to 2400 RPM. Has an accuracy of ±2% F.S. Push-button operation; powered by mercury batteries. Easily recalibrated. Measures 7¾" x 2⅝" x 3½". Weight 2 pounds.

## VERSATILE - DUAL SCALE

## Model 36

### O TO 2400 RPM and O TO 12,000 RPM

**For all-around versatility in RPM measurement, Pioneer's Model 36 Tachometer is unsurpassed**

This model is essentially two tachometers in one, with two scales (see photo): 0 to 2400 RPM and 0 to 12,000 RPM, with a simple switch making the change from low to high scale. ACCURACY IS ASSURED: BY DIRECTING THE BEAM TO A FLUORESCENT LIGHT, CALIBRATION TO 7200 RPM CAN BE MADE IMMEDIATELY. Maximum error in using either scale can be reduced by adding additional markers according to this formula:

$$\text{Low scale: } \frac{2400}{\text{No. of Markers}} \times .02 = \text{Max. Error}$$

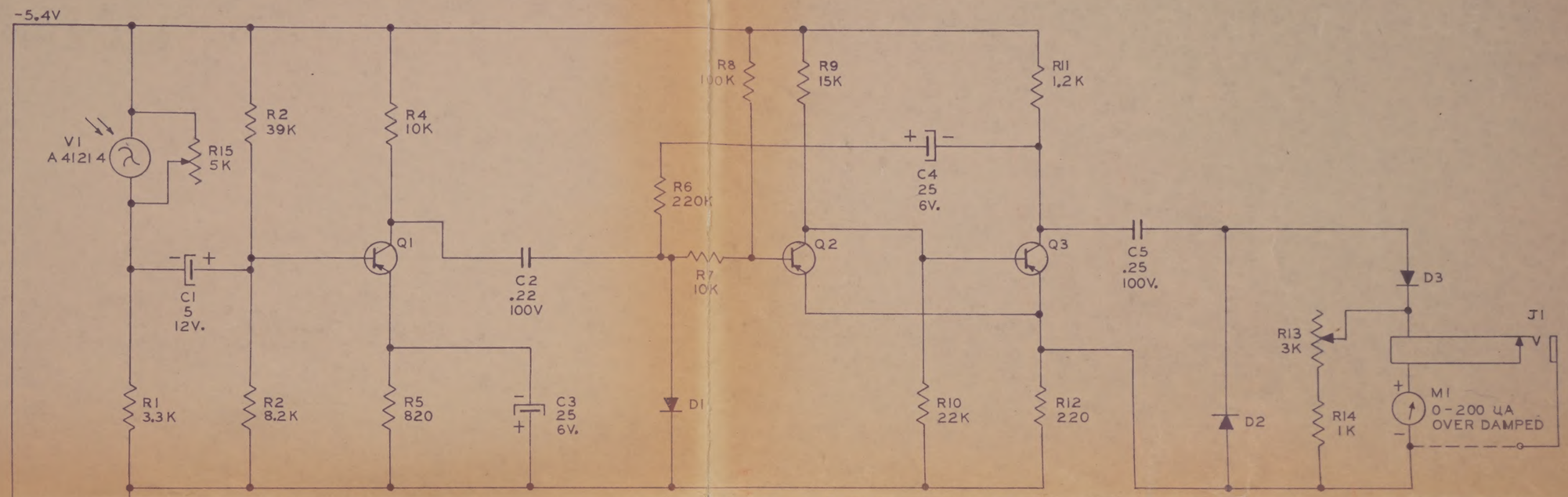
$$\text{High scale: } \frac{12{,}000}{\text{No. of Markers}} \times .02 = \text{Max. Error}$$

Push-button operation; powered by mercury batteries. Easily re-calibrated. Measures 7¾" x 2⅝" x 3½". Weight 2 pounds.

NOTE: MAKE CERTAIN THIS IS THE LATEST ISSUE BEFORE PROCEEDING WITH WORK.

DRAWING NUMBER C 41213 | REV. J

MP MASTER
MA30225




NOTES:

1. PHOTOCELL V1; SELECTED AS PER SPECIFCATION A41214
2. BATTERIES B1; TR134R. B2 & B3: ZM-9 MALLORY MERCURY TYPE OR EQUIVALENT.
3. SWITCH S1: $S1_A$ CONTACTS MUST MAKE BEFORE $S1_B$ CONTACTS.
4. OMIT METER JUMPER WHEN EXTERNAL METER JACK IS USED.
5. R15 IS FACTORY ADJUSTED FOR PROPER SENSITIVITY.

UNLESS OTHERWISE SPECIFIED:

TRANSISTORS ARE 2N5139
DIODES ARE IN87A
CAPACITORS ARE IN MFD'S
RESISTORS ARE IN OHMS 1/2 W. ±5 %

Pioneer Photatach

HCAL

| CKT. SYMB. | QTY. | PIONEER PT. NO. QTY. | DASH | USED ON | ITEM | NEXT ASSY. DRWG. | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

THE PIONEER ELECTRIC & RESEARCH CORPORATION
FOREST PARK, ILLINOIS
A SUBSIDIARY OF PENN CONTROLS, INC.

SCHEMATIC
MODEL 12 PHOTO-TACH

MATERIAL:
FINISH:

DIM. TOLERANCES
FRACT. ± — ANGLES ± —
DECIMAL ± —

RELEASED FOR MFG.
E.A. NO.

| DRWN. | CHKD. | APVD. | SCALE: |
|---|---|---|---|
| W.C. | | | |
| 12-31-70 | | 1-6-71 | DRAWING NUMBER C 41213 |

REV. J

REVISIONS

G REDWN: ADDED R15 12-31-70 DS1 WAS L1, ALL Q'S WERE 2N3640
H EA-228 R15 WAS 3K
J PER P261, CHANGED R8 WAS 220K 3-23-73 mrd

PE & R FORM C114

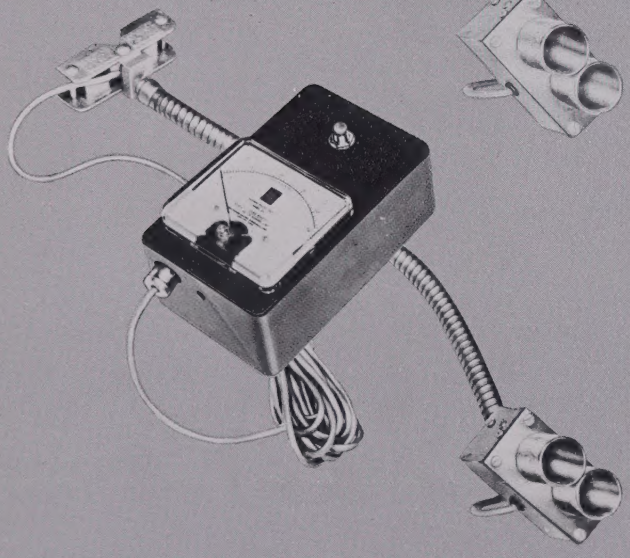
PIONEER PHOTO

# Snorkel Tachometers

**FOR ACCURATE RPM MEASUREMENTS IN DIFFICULT, DANGEROUS OR REMOTE LOCATIONS**

**SELF-CONTAINED COMPLETELY PORTABLE**
**TRANSISTORIZED CIRCUITS**
**NO MECHANICAL CONNECTIONS**

Each of these Photo Tachometers in their SNORKEL versions permits accurate RPM measurements in remote control situations. The extension unit can be used around corners or in difficult or dangerous locations, with the reading unit as much as 50 feet away. The SNORKEL has a magnetized mount, can be placed quickly and securely on any metal surface. Accuracy is as precise as the standard (one-piece) models.



## Model 36R

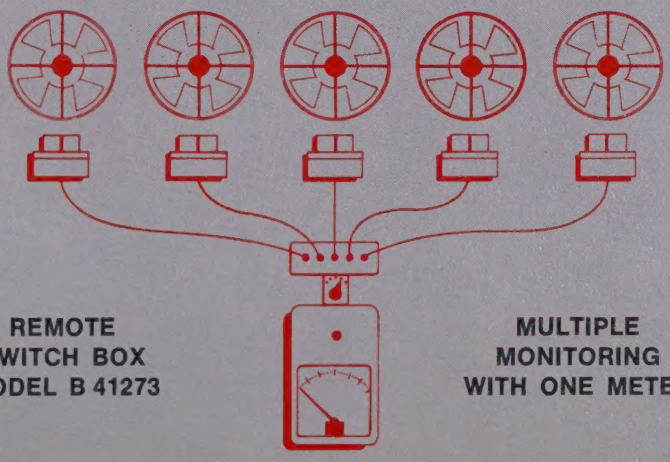
**DUAL SCALE MODEL**

0-2400 RPM and
0-12,000 RPM

## Model 24R

**LOW SCALE MODEL**

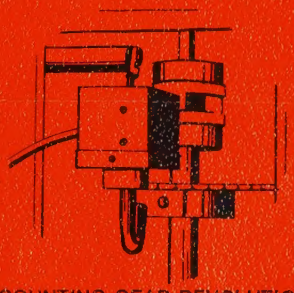
0-2400 RPM



**REMOTE SWITCH BOX MODEL B 41273**

**MULTIPLE MONITORING WITH ONE METER**

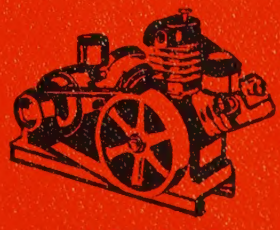
**WHERE TO USE PIONEER SNORKEL PHOTO TACHOMETERS**



COUNTING GEAR REVOLUTIONS IN INACCESSIBLE AREAS

COUNTING RPM IN DANGEROUS AREAS

COUNTING RPM OF ENGINES



VACUUM AND PRESSURE PUMPS

AN EXTRA PAIR OF HANDS

PIONEER

# Remote Reading Tachometers

## designed for use with 115V power supply

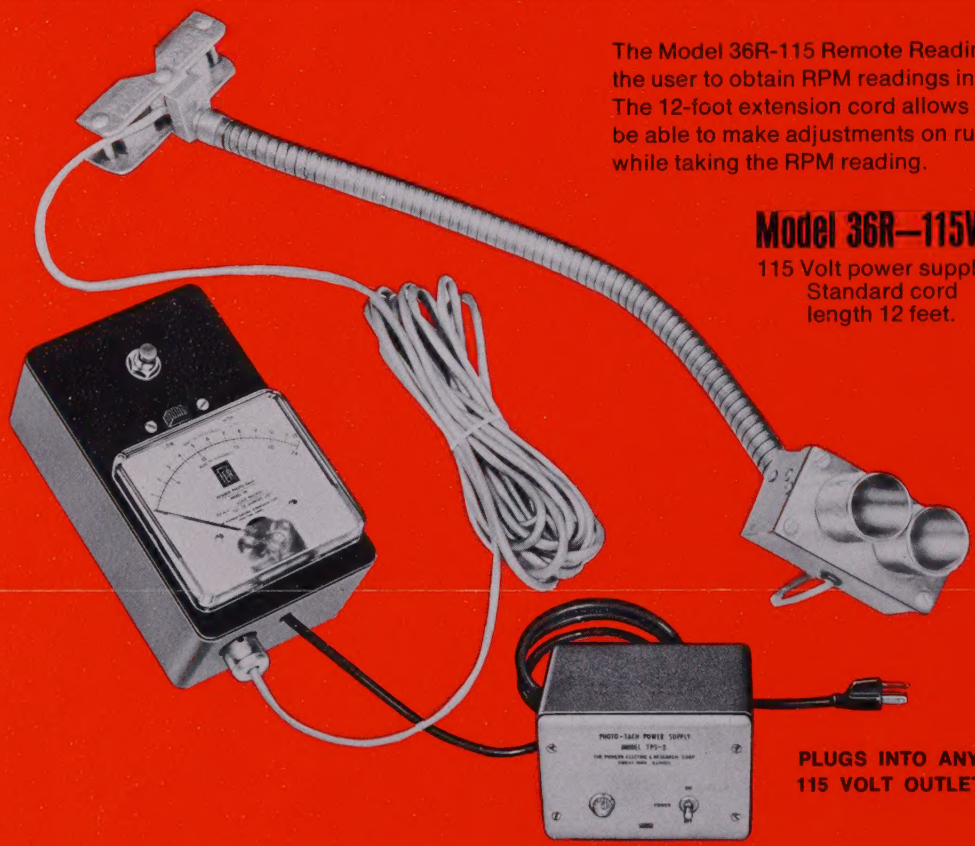
Reads RPMs from 0 to 12,000
Fully transistorized circuits
No mechanical connections
Operates from any 115 Volt source
New long life light bulb
Self-contained . . . Portable
Easy to use

Measure RPMs in the field or shop—wherever 115 Volt A.C. power is available.

**Use for:**

**TRACTORS**
**STATIONARY POWER POINTS**
**BOATS**
**SHOVELS**
**CRANES**
**HOISTS**
**EARTH MOVERS**
**TRUCKS**
**AUTOMOBILES**
**DIESEL MOTORS**

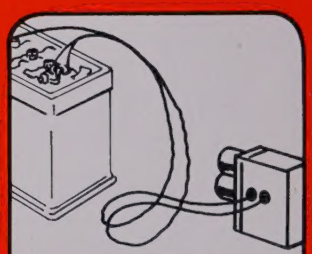
The Model 36R-115 Remote Reading Tachometer allows the user to obtain RPM readings in close quarters. The 12-foot extension cord allows enough movement to be able to make adjustments on running machinery while taking the RPM reading.



### Model 36R—115V

115 Volt power supply
Standard cord
length 12 feet.

**PLUGS INTO ANY 115 VOLT OUTLET**



### Model 36R—12V

Designed for use by connecting to any 6/12 Volt battery power supply. Excellent for use in the field.

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